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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/534,569

05/12/2005

Andrew T. Hunt

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09/12/2008

nGimatCo.

MICROCOATING TECHNOLOGIES, INC.

5315 PEACHTREE INDUSTRIAL BLVD

ATLANTA, GA 30341-2107

EXAMINER

GREGORIO, GUINEVER S

ART UNIT

PAPER NUMBER

4162

MAIL DATE

DELIVERY MODE

09/12/2008

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/534,569	Applicant(s) HUNT ET AL.	
	Examiner GUINEVER S. GREGORIO	Art Unit 4162	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 14 August 2008.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-10 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-10 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 12 May 2005 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Election/Restrictions

Applicant's election without traverse of Group I, Claims 1-10, in the reply filed on July, 14, 2008 is acknowledged.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1, 2, 3, 4, 5, 9, and 10 are rejected under 35 U.S.C. 102(b) as being anticipated by Hunt et al. (U.S. Pat. No 6,132,653). Hunt et al. '653 teaches a process to form carbonaceous material (column 11, line 55). Hunt et al. '653 teaches a maximum droplet size of less than 2 μm (column 8, lines 28-30). Furthermore, Hunt et al. '653 teaches solution containing carbon which corresponds to organic compounds contained in droplets (column 13, lines 30-35).

Regarding claim 2, Hunt et al. '653 teaches a substrate cooling means comprising a means for directing water onto the substrate or other methods known to one of ordinary skill in the art (column 11, lines 48-53). Furthermore, Hunt et al. '653 teaches carbonaceous material (column 11, line 55).

Regarding claim 5, Hunt et al. '653 teaches combustion reactions (abstract, lines 6-14).

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Regarding claim 9, Hunt et al. '653 teaches propane as a secondary solution which is a gas at STP (column 17, lines 55-56).

Regarding claim 10, Hunt et al. '653 teaches a process comprising very fine atomization or vaporization of a reagent containing liquid or liquid-like fluid near supercritical temperature which corresponds to a liquid source heated sufficiently (abstract, lines 1-4). Furthermore, Hunt et al. '653 teaches a solution heated prior to release through a nozzle (column 5, lines 22-25).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

Determining the scope and contents of the prior art.
Ascertaining the differences between the prior art and the claims at issue.
Resolving the level of ordinary skill in the pertinent art.
Considering objective evidence present in the application indicating obviousness or nonobviousness.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were

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made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 6 and 7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hunt et al. '653 as applied to claim 1 above, and further in view of Sudo Akitaka et al (Japanese Pub. No. 07-150419). Hunt et al. '653 teaches a vapor deposition method to form carbonaceous material wherein the method utilizes a droplet size of less than 2 μm (column 11, line 55; column 8, lines 28-30). Hunt et al. teaches the addition of dopants or a second phase to the carbon coating (column 13, lines 65-66). Hunt et al. does not teach cations. Sudo Akitaka et al. teaches the vapor phase growth of carbonaceous material wherein a solution of benzene and ferrocene is combusted in a furnace (paragraph 15, lines 7-8). Furthermore, Sudo Akitaka et al. teaches using transition metals in groups Iva, Va, Via, VIIa and VIII such as iron, nickel and cobalt as a seed for growing carbonaceous materials which correspond to cation precursors (paragraph 6, lines 1-12). Sudo Akitaka et al. teaches improved productivity of carbonaceous material when the transition material is introduced in the thermal decomposition zone region with an organic compound (paragraph 2, lines 5-10). It would have been obvious to one of ordinary skill in the art at the time of the invention to use the vapor deposition method taught by Hunt et al. with a metal seed catalyst (cation

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precursor) in solution to form carbonaceous materials in order to maintain the reaction velocity in order to produce industrial amounts of product.

Claim 8 is rejected under 35 U.S.C. 103(a) as being unpatentable over Hunt et al. '653 as applied to claim 1 above, and further in view of Arndt et al. (WIPO Pub. No. WO 02/072258 A1). Hunt et al. '653 teaches a vapor deposition method to form carbonaceous material wherein the method utilizes a droplet size of less than 2 μm (column 11, line 55; column 8, lines 28-30). Hunt et al. does not teach necking of primary particles, i.e. aggregates. Arndt et al. teaches carbon blacks, a type of carbonaceous material, are generally characterized by analytical properties such as particle size, specific area, aggregate size, shape and distribution, which is considered to include necking as aggregation (page 1, lines 25-30). Arndt et al. teaches the properties of carbon black depend upon the conditions of manufacture and may be modified by altering temperature, pressure, feedstock, residence time, quench temperature, throughput and other parameters (page 2, lines 6-10). Furthermore, Arndt et al. teaches a broad spectrum of uses for carbon black (page 1, lines 8-17). It would have been obvious to one of ordinary skill in the art at the time of the invention to use the vapor method taught by Hunt et al. '653 to produce carbonaceous materials and modify the parameters stated by Arndt et al. so that the desired physical and chemical properties such as aggregation size are achieved for the various uses of the carbon material.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to GUINEVER S. GREGORIO whose telephone number is (571)270-5827. The examiner can normally be reached on Monday-Thursday, 10:30-5:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jennifer McNeil can be reached on 571-272-1540. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

gsg

/Jennifer McNeil/
Supervisory Patent Examiner, Art Unit 4162